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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/674,581	TSUTSUI ET AL.	
	Examiner	Art Unit	
	Bruce D. Hissong, Ph.D.	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7,9,13,15,19,21-27,32,33,35,36 and 38-44* is/are pending in the application.

4a) Of the above claim(s) *21-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7, 9, 13, 15, 19, 32-33, 35-36, and 38-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Formal Matters

1. Applicants' response to the office action mailed on 10/16/2008, including amended claims and arguments/remarks, was received on 4/10/2009 and has been entered into the record.

2. In the response received on 4/10/2009, Applicants cancelled claims 31, 34, and 37. Therefore, claims 7, 9,13,15,19, 21-27, 32-33, 35-36, and 38-44 are pending, with claims 21-27 withdrawn as non-elected subject matter. Claims 7, 9,13,15,19, 32-33, 35-36, and 38-44 are the subject of this office action.

Claim Objections

1. Claim 7 *remains objected to* for reasons set forth on page 2 of the office action mailed on 10/16/2008. Although Applicants' amendments to the claim to specify "administration of a vaccine antigen as a composition" are noted, the claim still appears to read on both a product and a method. Claim 13 is objected to for the same reasons.

Furthermore, in view of Applicants' amendments to recite "at the same time as administration of a vaccine antigen", the objection regarding the phrase "at the same time as a vaccine antigen" as set forth on page 2 of the office action mailed on 10/16/2008, is hereby *withdrawn*.

2. Objection to claims 9 and 15, as set forth on page 2 of the office action mailed on 10/16/2008, is *withdrawn* in view of Applicants' amendments to recite "wherein the amount of interferon α is 0.5 to 5,000,000 IU."

3. Objection to claim 44, as set forth on page 2 of the office action mailed on 10/16/2008, is withdrawn in view of Applicants' amendments to the claim to recite "a mucoadhesive microsphere".

4. The Examiner suggests amending claim 19 to read "A composition comprising a mucosal adjuvant and a vaccine antigen for inducing both vaccine-antigen specific antibody in the blood and vaccine antigen-specific antibody secreted at the mucosal surface, wherein said mucosal adjuvant comprises a natural interferon α as the active ingredient and said vaccine antigen comprises a protein or

peptide antigen, and wherein said vaccine antigen-specific antibody is secreted at the gastrointestinal mucosal surface" or something similar. As written, it appears that the composition is intended to comprise both adjuvant and vaccine antigen, but the language of the claims only specifically states that the composition comprise a mucosal adjuvant.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Rejection of claims 9 and 15 under 35 USC § 101 for recitation of a use without setting forth any steps involved in the process, as set forth on pages 7-8 of the office action mailed on 10-16-2008, is *withdrawn* in response to Applicants' amendments to the claims to delete the recitation of a "use".

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Rejection of claims 9 and 15 under 35 USC § 112, second paragraph, as being indefinite regarding the recitation of a "use" for IFN-α without setting forth any steps involved in the method/process, as set forth on page 8 of the office action mailed on 10/16/2008, is *withdrawn* in response to Applicants' amendments to the claims to delete recitation of a "use".

2. Rejection of claim 40 under 35 USC § 112, second paragraph, as being indefinite regarding the ratio of vaccine antigen in the claimed mucosal adjuvant, as set forth on page 8 of the office action mailed on 10/16/2008, is *withdrawn* in response to Applicants' amendments to claim 40 to refer to the composition of claim 19, and the amendments to claim 19 to recite a composition comprising a mucosal adjuvant, and a vaccine antigen in said composition.

3. Rejection of claims 40-41 under 35 USC § 112, second paragraph, for lack of antecedent basis for the phrase "the entire composition", as set forth on page 8 of the office action mailed on 10/16/2008, is *withdrawn* in response to Applicants' amendments to claims 40-41 to recite the composition of claim 19, and the amendments to claim 19 to recite a composition comprising a mucosal adjuvant.

4. Rejection of claim 43 under 35 USC § 112, second paragraph, as being indefinite regarding the undefined acronym PLGA, as set forth on pages 8-9 of the office action mailed on 10/16/2008, is *withdrawn* in response to Applicants' amendments to the claim to define PLGA.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 7,9,13,15,19, 31-33, 35-36, and 38-39 *remain rejected* under 35 USC § 102(b) as being anticipated by Takasu (*Kurume Med. J.*, 2001, Vol. 48, p. 171-174), as set forth on pages 9-10 of the office action mailed on 10/16/2008.

The claims of the instant invention are drawn to a mucosal vaccine adjuvant comprised of a natural IFN-α, wherein nasal mucosal administration of a composition comprising said mucosal adjuvant and a protein/peptide vaccine antigen induces both vaccine antigen-specific antibody in blood and vaccine antigen-specific antibody secreted at the gastrointestinal mucosal surface. The claims are also drawn to a combined product of a vaccine antigen and mucosal adjuvant comprised of a vaccine antigen and IFN-α, wherein the vaccine antigen is a protein or peptide antigen, the IFN-α is natural IFN-α, and wherein said nasal mucosal administration of said mucosal adjuvant/vaccine antigen induces both vaccine antigen-specific antibody in blood and vaccine antigen-specific antibody secreted at the gastrointestinal mucosal

surface. The claims further recite specific amounts of IFN-α, and locations for inducting of vaccine-specific antibody and specific types of antibodies.

Takasu teaches a composition comprising IFN-α and a peptide antigen derived from influenza virus (see p. 172, 2nd column - 1st paragraph of "Results"), and administration of this IFN-α/peptide composition to mice. Takasu discloses that the IFN-α is murine IFN-α produced by infecting cells with a virus, and thus the produced IFN-α could be considered a "natural" IFN-α, especially in the absence of a preferred definition in the specification. Takasu also teaches that the IFN-α was present in a concentration of 1×10^5 U.

In the response received on 4/10/2009, the Applicants argue that claims 7, 13, and 19 have been amended to recite that the vaccine-antigen specific antibody is secreted at the gastrointestinal mucosal surface, and that this feature is not described or disclosed by Takasu. Therefore, because each and every element of the claims is not present in the cited reference, Takasu does not anticipate the claims of the present invention.

These arguments have been fully considered and are not persuasive. As stated in the previous office action, the claims are drawn to products, namely a mucosal adjuvant or a combined product of a mucosal adjuvant and an antigen, rather than to a method of administering these products. The claims require that the mucosal adjuvant comprise a natural IFN-α, or require that the combined product comprise a natural IFN-α and a peptide or protein vaccine antigen. Takasu teaches a composition comprising IFN-α and Flu peptide (p. 172, 2nd column, 1st full paragraph of "Results" section), and thus teaches a composition comprising IFN-a as an adjuvant and Flu peptide as a peptide vaccine antigen. Although Takasu does not explicitly teach mucosal administration of this composition and subsequent secretion of Flu peptide-specific antibodies at the gastrointestinal mucosal surface, this composition disclosed by Takasu is the same as that being claimed, and if administered mucosally, would therefore be expected to *inherently* induce secretion of Flu peptide-specific antibodies at the gastrointestinal mucosal surface. It is noted that the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer. *Atlas Powder Co. v Ireco Inc.* 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Furthermore, case law has established that a compound and all of its properties are inseparable, as are its processes and yields (*In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963)).

In the instant case, the compositions of the instant invention (compositions comprising IFN-α as a mucosal adjuvant, or a combined product comprising IFN-α as a mucosal adjuvant and a peptide/protein vaccine antigen) are identical in composition to what is taught by Takasu (a composition comprised of

IFN-α and Flu peptide). Therefore, in the absence of evidence to the contrary, the composition of Takasu would inherently possess any properties or activities required of the claimed compositions. Because the USPTO does not have the facilities for testing the IFN-α/Flu peptide composition of Takasu, the burden is on the Applicants to show a novel and unobvious difference between the claimed compositions and those of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray, 10 USPQ 2d 1922 1923 (PTO Bd. Pat. App. & Int.).

2. Claims 7, 9, 13, 15, 19, 31-33, 35-36, and 38-39, *remain rejected* under 35 USC § 102(e) as being anticipated by Tovey *et al* ("Tovey" – US 6,361-769), as set forth on pages 10-11 of the office action mailed on 10/16/2008.

The subject matter of the instant invention is described *supra*. Tovey teaches a composition comprising natural murine IFN-α at 4 x 10^6 IU/ml (column 6, lines 19-31), and oromucosal administration of this IFN-α (see Examples 1-3).

In the response received on 4/10/2009, the Applicants argue that Tovey teaches a method for stimulating the immune response by administering an IFN via oromucosal contact, and that there is no teaching or suggestion of a mucosal adjuvant comprising a natural IFN-α and a protein or peptide antigen being administered via the nasal mucosa and eliciting a systemic immune response as well as a mucosal immune response. Thus, Tovey does not teach each and every element required by the claims because Tovey does not teach that antigen being present in the composition.

These arguments have been fully considered and are not persuasive. As set forth above, the language of independent claims 7, 13, and 19 is such that they are product claims rather than method claims for administering the claimed mucosal adjuvant, and the claims only require that the mucosal adjuvant or combined product comprise IFN-α. Because Tovey teaches a composition comprising IFN-α, Tovey teaches a composition which is identical to the claimed compositions. Thus, although Tovey does not explicitly teach stimulation of systemic and mucosal immune responses by nasal administration of IFN-α and a peptide antigen, the IFN-α composition of Tovey, if administered with a protein/peptide antigen, would be expected to *inherently* be capable of stimulating antigen-specific antibody secretion at the gastrointestinal mucosal surface, as is currently required in the claims.

As set forth above, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer. *Atlas Powder Co. v Ireco Inc.* 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Furthermore, case law has established that a compound and all of

its properties are inseparable, as are its processes and yields (*In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963)). In the instant case, the composition of Tovey does not differ from that which is currently claimed, and therefore the composition of Tovey meets the limitations of claims 7, 9, 13, 15, 31-33, and 35-36 of the instant invention.

3. Claims 7, 9, 13, 15, 31-33, and 35-36, *remain rejected* under 35 USC § 102(e) as being anticipated by Foster *et al* ("Foster" – US 6,436,391), as set forth on page 11 of the office action mailed on 10/16/2008.

The subject matter of the instant invention is discussed *supra*. Foster discloses a vaccine adjuvant comprising IFN-α (column 1, lines 57-65; claims 1-2). Specifically, Foster teaches an adjuvant composition comprising IFN-α_8 and/or IFN-α_{14}. Foster also teaches a composition comprising an antigen and IFN-α_8 and/or IFN-α_{14} as an adjuvant (see claims 1-4, 6-7).

In the response received on 4/10/2008, the Applicants argued Foster teaches that B cell proliferation can be induced by certain IFN-α subtypes, and clearly the specification and claims of Foster only teach the use of an IFN-α subtype and IFN-α as claimed. Therefore, each and every element of the claims is not taught by Foster.

These arguments have been fully considered and are not persuasive. As set forth in the previous office action, the instant specification does not provide a preferred definition for "natural" IFN-α, and it is well-known in the art that these IFN-α subtypes are *naturally occurring* human IFN-α polypeptides (see Pestka - cited in previous office action). Therefore, contrary to Applicants' assertion, Foster does indeed teach compositions comprising a natural IFN-α and an antigen, and therefore does teach the limitations of the present claims.

Furthermore, because the compositions taught by Foster are the same as those which are currently claimed, the compositions of Foster would be expected, in the absence of evidence to the contrary, to inherently be capable of inducing vaccine-antigen dependent antibody at the gastrointestinal mucosal surfaces. As set forth above, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer. *Atlas Powder Co. v Ireco Inc.* 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Furthermore, case law has established that a compound and all of its properties are inseparable, as are its processes and yields (*In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963)). In the instant case, the compositions of Foster do not differ from that which is currently

claimed, and therefore the compositions of Foster meets the limitations of claims 7, 9, 13, 15, 19, and 31-33 and 35-36 of the instant invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 7, 9, 13, 15, 19, 31-33, 35-36, and 38-41 *remain rejected* under 35 USC § 103(a) as being obvious in view of the combination of Staats *et al* ("Staats" – WO00/20028) and Takasu (*Kurume Med. J.*, 2001, Vol, 48, p. 171-174), as set forth on pages 3-5 of the office action mailed on 10/16/2008.

The subject matter of the claims of the instant invention is discussed *supra*.

Staats teaches a method of eliciting an immune response by administration of a vaccine antigen and an adjuvant (see abstract, and claim 1). Staats teaches that the vaccine antigen can be either protein or peptide antigens, including protein/peptide antigens from a number of pathogenic organisms (see p. 21, line 11 – p. 23, line 2). Staats also teaches that various cytokines can be used as adjuvants (see p. 14, line 19 – p. 15, line 2, and claims 5-6). Furthermore, Staats teaches mucosal administration of the vaccine-adjuvant combination (claim 17), and also teaches that the vaccine-adjuvant induces both systemic (claim 22) and mucosal (claim 25) immune responses. Finally, by teaching that the vaccine and adjuvant are included together as a composition, Staats teach that the vaccine antigen and the adjuvant are administered at the same time and by the same route of administration. However, Staats is silent regarding the use of IFN-α as the adjuvant for any antigen-adjuvant combination or composition.

Takasu teaches that IFN-α is a potent adjuvant for increasing the immune response to various vaccine antigens. Specifically, Takasu discloses that co-administration of IFN-α with influenza virus peptide increased the cytotoxic T lymphocyte (CTL) response to the influenza virus peptide compared to vaccination with the influenza virus peptide alone (see p. 172-174, Figures 1-3).

In the response received on 4/10/2009, the Applicants argue that the claims are not obvious in view of the combination of Staats and Takasu because Staats fails to teach the specifically claimed IFN-α adjuvant, and Takasu does not teach nasal administration or stimulation of antibodies at the

gastrointestinal mucosal surface. Furthermore, Takasu teaches continuous administration of antigen via osmotic pump while the IFN-α is injected, and there is not teaching of suggestion of the adjuvant and the antigen peptide being administered at the same time. Also, because the route of administration described by Staats is different that the use and methods of Takasu, there is no rational underpinning to support a legal conclusion of obviousness.

These arguments have been fully considered and are not persuasive. As set forth above, the claims are drawn to products (i.e. compositions comprising an adjuvant and antigen), rather than methods of mucosal administration. Staats teaches mucosal administration of a protein/peptide antigen and an adjuvant, while Takasu teaches that IFN-α is a potent vaccine adjuvant. Therefore, one of ordinary skill would be motivated by the combination of Staats and Takasu to create a composition comprising IFN-a as a vaccine adjuvant, or a composition comprised of both IFN-α as a vaccine adjuvant and a peptide/protein antigen. The motivation to do so comes from the combined teachings of Staats and Takasu which collectively show that a composition comprising an antigen and an adjuvant can be mucosally administered, and that IFN-α is a potent antigen. Furthermore, even though the claims are drawn to a composition, a person of ordinary skill in the art would be motivated to use IFN-α as the adjuvant in the composition of Staats for mucosal administration, and administer a composition comprising both IFN-a and a peptide antigen via the mucosal route. Regarding Applicants' assertion that Takasu does not teach administration of both IFN-α and an antigen, it is noted that Takasu does indeed teach administration of a composition comprising IFN-α and Flu peptide (p. 172, column 2, 1st full paragraph of the "Results" section).

Therefore, because Staats teaches mucosal administration of a composition comprising an adjuvant and a peptide/protein antigen, and Takasu teaches administration of a peptide antigen and IFN-α as an adjuvant, one of ordinary skill in the art would have the motivation to substitute the IFN-α of Takasu as the adjuvant of Staats and create a composition for mucosal administration comprising a peptide/protein antigen and IFN-α. Furthermore, although neither Staats nor Takasu specifically teach stimulation of antibody secretion at the gastrointestinal mucosal surface, because a composition comprising IFN-a and a peptide/protein antigen as suggested by the combinatinon of Staats and Takasu is the same as the presently claimed compositions, this composition would be expected to inherently possess the ability to stimulate antibody secretion at the gastrointestinal mucosal surface.

2. Claims 7, 9, 13, 15, 19, 31-33, 35-36, and 38-41 *remain rejected* under 35 USC § 103(a) as being obvious in view of the combination of Foster *et al* ("Foster" – US 6,436,391) and Tovey *et al* ("Tovey" – US 6,361,769), as set forth on pages 5-7 of the office action mailed on 10/16/2008.

The subject matter of the claims of the instant invention is discussed *supra*. Foster teaches the use of IFN-α as a vaccine adjuvant to increase B lymphocyte proliferation, and thus increase the effectiveness of vaccines (column 1, lines 52-56), and specifically recites co-administration of a vaccine with IFN-α, or alternatively, a composition comprised of IFN-α and a vaccine (column 1, lines 61-65). Foster is silent regarding mucosal administration of an IFN-α vaccine-adjuvant composition, and is also silent regarding specific amounts or doses of IFN-α.

Tovey teaches a method of stimulating host immunity by oromucosal administration of IFN-α (column 2, line 32 – column 3, line 28). Tovey discloses specific doses of IFN-α that can be oromucosally administered (column 3, line 15-20), and also teaches that IFN-α can be administered as an adjunct to other therapy (column 3, lines 21-22), and specifically mentions previous studies in which IFNs where orally administered to enhance the efficiency of vaccines (column 1, lines 61-66).

In the response received on 4/10/2009, the Applicants argue that the claims of the present invention are not obvious in view of the cited combination because Foster teaches that some subtypes were effective in promoting B cell proliferation and another subtype was totally infective, and therefore a person of ordinary skill in the art would have to expectation of success of using IFN-α without separating the molecules into various subtypes. The Applicants also argue that Tovey teaches a method for stimulating an immune response by oromucosal administration of IFN-α, but does not teach or suggest a mucosal adjuvant comprising a natural IFN-α and an antigen comprising a protein or peptide antigen being administered via the nasal mucosa eliciting a systemic immune response as well as a mucosal immune response.

These arguments have been fully considered and are not persuasive. Regarding Applicants' argument that a person of ordinary skill in the art would have no expectation of success by following the teachings of Foster, it is noted that the claims are not drawn to methods of stimulating B cell proliferation, and instead the claims only require the mucosal adjuvant compositions to comprise "natural" IFN-α, and in the absence of a preferred definition of "natural" IFN-α, the IFNs of Foster could be considered as "natural" IFN-α. Furthermore, because Foster discloses two IFN-α subtypes which can be used as a vaccine adjuvant (see claims 1-7 of Foster), Foster provides ample motivation and an expectation of success in using the recited IFN-α subtypes in adjuvant compositions. Regarding Applicants' arguments

that Tovey does not teach a composition comprising IFN-α and a peptide antigen, it is noted that the claims do not actually require the cited compositions to comprise both IFN-α and a peptide/protein vaccine antigen. Even if the did recite compositions comprising both IFN-α and a peptide/protein vaccine antigen, Tovey teaches that mucosally administered IFN-α is a potent stimulator of immunity, and therefore a person of ordinary skill would have the motivation to create a composition comprising IFN-α and a peptide/protein antigen formulated for mucosal administration. Furthermore, because a composition comprising an antigen and IFN-α as an adjuvant would be identical to the presently claimed compositions, it would be expected that such compositions would *inherently* stimulate secretion of antibodies at the gastrointestinal mucosal surface when said compositions are administered mucosally.

3. Claim 41 *remains rejected* under 35 USC § 103(a) as being obvious in view of either Takasu or Foster, as set forth on page 12 of the office action mailed on 10/16/2008.

The subject matter of the instant claims is discussed supra. Claim 41 is further drawn to the mucosal adjuvant of claim 19, wherein the ratio of IFN-a is 0.01 to 5% w/w of the composition.

In the response received on 4/10/2009, the Applicants argue that claim 41 depends from claim 19 and claim 19 is unobvious as set forth above, and therefore claim 41 cannot also be obvious.

These arguments have been fully considered and are not persuasive. As set forth above, claim 19 is anticipated by both Takasu and Tovey, and as set forth in the previous office action, it would therefore be obvious to optimize the percentage of IFN-α in the compositions of either Takasu or Foster in order to create the most effective IFN-α adjuvant composition. Therefore, claim 41 is obvious in view of either Takasu or Foster.

It is also noted that while this rejection was originally made in view of either Takasu or Foster or Tovey, it is noted that claim 19 now recites a composition comprised of both IFN-α and an antigen. Because Tovey does not teach such a composition, no rejection is being made in view of Tovey.

4. Claims 42-44 *remain rejected* under 35 USC § 103(a) as being obvious in view of Takasu in view of Kawashima *et al* (*Pharm. Dev. Tech.*, 2000, Vol. 5(1), p. 77-85), as set forth on pages 12-13 of the office action mailed on 10/16/2008.

The subject matter of the present invention is discussed *supra*. Kawashima teaches that PLGA is a biocompatible and biodegradable carrier suitable for delivering numerous peptides/polypeptides, and teaches PLGA can be modified in order to create microspheres capable of adhesion to the mucosal surface of the gut.

In the response received on 4/10/2009, the Applicants argue that Kawashima has nothing at all to do with nasal administration of a vaccine as claimed, and instead teaches oral administration. The Applicants assert that there is no teaching or suggestion of using PLGA compositions as currently claimed.

These arguments have been fully considered and are not persuasive. As set forth above, Takasu teaches a composition comprising IFN-α as an adjuvant and a peptide antigen that meets the limitations of independent claim 19. Because Kawashima teaches that PLGA microspheres are useful for delivery of various agents and is mucoadhesive, a person of ordinary skill in the art would have the motivation to create a composition comprising IFN-α as a mucosal adjuvant wherein the IFN-α is encapsulated in PGLA microspheres.

5. Claims 42-44 *remain rejected* under 35 USC § 103(a) as being obvious in view of Tovey in view of Kawashima *et al* (*Pharm. Dev. Tech.*, 2000, Vol. 5(1), p. 77-85), as set forth on pages 13-14 of the office action mailed on 10/16/2008.

The subject matter of the present invention is discussed *supra*. Kawashima teaches that PLGA is a biocompatible and biodegradable carrier suitable for delivering numerous peptides/polypeptides, and teaches PLGA can be modified in order to create microspheres capable of adhesion to the mucosal surface of the gut.

In the response received on 4/10/2009, the Applicants argue that Kawashima has nothing at all to do with nasal administration of a vaccine as claimed, and instead teaches oral administration. The Applicants assert that there is no teaching or suggestion of using PLGA compositions as currently claimed.

These arguments have been fully considered and are not persuasive. As set forth above, Tovey teaches a composition comprising IFN-α as an adjuvant that meets the limitations of independent claim 19. Because Kawashima teaches that PLGA microspheres are useful for delivery of various agents and is mucoadhesive, a person of ordinary skill in the art would have the motivation to create a composition comprising IFN-α as a mucosal adjuvant wherein the IFN-α is encapsulated in PGLA microspheres.

Conclusion

No claim is allowable.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce D. Hissong, Ph.D., whose telephone number is (571)272-3324. The examiner can normally be reached M-F from 8:30 am - 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol, Ph.D., can be reached at (571) 272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bruce D. Hissong
Art Unit 1646

/Robert Landsman/
Primary Examiner, Art Unit 1647